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Environmental Compliance Guide

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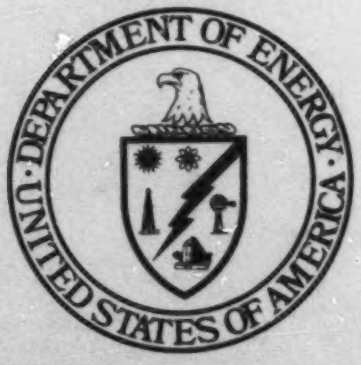
Guidance Manual For Department of Energy Compliance With Corps of Engineers Permits on Dredging and Filling Activities

July 1982



U.S. Department of Energy
Office of Environmental Protection,
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Office of Environment, Safety, and Health
Office of Environmental Compliance

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Washington 20585 D.C.

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Guidance Manual For Department of Energy Compliance With Corps of Engineers Permits on Dredging and Filling Activities

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Preface

This guidance manual was prepared to assist Department of Energy personnel in developing information and performing analyses required for obtaining permits from the U.S. Army Corps of Engineers (COE) in compliance with the provisions of Sect. 404 of the Clean Water Act (CWA) as amended (Pub. Ls. 92-500, 95-217, 95-576) and Sects. 9 and 10 of the River and Harbor Act of 1899 (33 U.S.C. 401). The manual does not add new requirements nor does it alter existing requirements for a COE permit. Rather, the manual is intended to be advisory and to present guidance and information that should assist DOE compliance efforts. Supplements to this guidance manual will be issued if changes to COE regulations or amendments to the CWA are implemented.

Acknowledgments

This document was prepared for the U.S. Department of Energy, Office of the Assistant Secretary for Environmental Protection, Safety, and Emergency Preparedness, Office of Environment, Safety, and Health, Office of Environmental Compliance by Glenn F. Cada and Patrick J. Mulholland of the Environmental Sciences Division, Oak Ridge National Laboratory (operated by Union Carbide Corporation under contract number W-7405-eng-26 with the Department of Energy). Personnel from various district offices of the U.S. Army Corps of Engineers and regional offices of the U.S. Environmental Protection Agency were helpful in providing information on the permitting process and available guidelines. S. Marshall Adams and James M. Loar of Oak Ridge National Laboratory and James H. Bradley of the South Atlantic Division, U.S. Army Corps of Engineers reviewed the manuscript. Robert M. Reed was the project manager. Publication No. 2005, Environmental Sciences Division, Oak Ridge National Laboratory, Oak Ridge, Tennessee 37830.

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Abstract

This document provides general guidance for Department of Energy officials responsible for complying with Sects. 9 and 10 of the River and Harbor Act of 1899 (RHA) and with Sect. 404 of the Clean Water Act of 1977 (CWA). Sections 9 and 10 of the RHA authorize the U.S. Army Corps of Engineers (COE) to issue permits for dams and erecting structures or undertaking work in, or affecting, navigable waters, including dredging. Although the original purpose of these two sections was to facilitate navigation, the COE now considers environmental concerns as well. Section 404 of the CWA authorizes the COE to issue permits for the discharge of dredged or fill materials into all waters of the United States. The principal concern under Sect. 404 is environmental protection. Although the procedures and information needs for obtaining a permit for Sect. 404 activities will vary depending on the nature of the proposed activity, the environmental setting, and the affected COE district and EPA region, the review of permit applications involving activities regulated under Sect. 404 of the CWA will follow published Guidelines developed by EPA in conjunction with COE. EPA Guidelines require that potential impacts on physical, chemical, and biological characteristics of the aquatic ecosystem, special aquatic sites, and human use be considered. Early planning meetings will establish both the level of existing information and the types of new information needed by COE to process and review a Sect. 404 permit application. Guidance is provided in this document on general approaches for collecting, analyzing, and presenting information that addresses the environmental issues considered.

Glossary of Acronyms

CFR	-	Code of Federal Regulations
COE	-	U.S. Army Corps of Engineers
CWA	-	Clean Water Act of 1977, as amended
DE	-	District Engineer
DOE	-	U.S. Department of Energy
EA	-	Environmental Assessment
EIS	-	Environmental Impact Statement
EPA	-	U.S. Environmental Protection Agency
FR	-	Federal Register
FWS	-	U.S. Fish and Wildlife Service
NMFS	-	National Marine Fisheries Service
RHA	-	River and Harbor Act of 1899

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1. Introduction

The Army Corps of Engineers has been empowered by various statutes to issue or deny permits for all work in navigable waters of the United States and for discharge of dredged or fill material in all waters of the United States and in the ocean. Sections 9 and 10 of the River and Harbor Act of 1899 (RHA) authorize the Army Corps of Engineers (COE) to regulate all construction, dredging, and other work in navigable waters of the United States. Although the original purpose of this statute was to facilitate navigation, the COE now considers environmental concerns as well. Section 404 of the Clean Water Act of 1977 (CWA) authorizes the COE to regulate the discharge of dredged or fill material into all waters of the United States. The principal concern of this provision is environmental protection, and information requirements and evaluation procedures reflect this goal. The Environmental Protection Agency (EPA) has promulgated guidelines (40 CFR 230) for the specification of disposal sites for dredged or fill material, and also has the power to restrict or prohibit the use of a site if discharge of the material will have an unacceptable adverse impact on municipal water supplies, shellfish beds, fishing areas, or wildlife or recreational areas.

This manual provides general guidance for obtaining permits from COE in compliance with Sects. 9 and 10 of the RHA and Sect. 404 of the CWA. The manual is one of a series of documents developed by the Office of Environmental Compliance of DOE to provide project managers with information on environmental requirements associated with federal and state permits and approvals. This manual is supplementary to and should be used in conjunction with the DOE Environmental Compliance Guide (DOE 1981) which contains regulations implementing Sect. 404 (DOE 1981, Vol. II, Tab C) as well as a flow chart outlining the basic steps involved in complying with permit requirements (DOE 1981, Vol. I, Flow III-3). Specific guidance is provided on: (1) the types of information that may be needed to obtain permits to comply with the various statutes; and (2) the approach to be used in collecting, evaluating, and presenting the information.

The contents of this document are based on discussions with personnel of the U.S. Army Corps of Engineers (COE) and the U.S. Environmental Protection Agency (EPA) and on existing regulations and guidance.

Information contained herein is intended to provide general guidance and should not be considered a legal interpretation of the regulations discussed. Contact with COE should be established as early in the planning process as possible to obtain information on program changes and current requirements.

2. Background

The Federal Water Pollution Control Act Amendments of 1972 and the Clean Water Act of 1977 prohibit the discharge of dredged or fill material into waters of the United States except in compliance with Sect. 404. Section 404 establishes a procedure for issuing permits which specifies acceptable discharge sites and exempts certain discharges from permit requirements [e.g., emergency repairs, certain farm and forest roads, and other discharges specified in Sections 404(f)]. In addition, Sect. 404(r) exempts the discharge of dredged or fill material as part of the construction of a Federal project from regulation under Sect. 404 if (1) the project has been specifically authorized by Congress, (2) information of the effects of the discharge [including consideration of 404(b)(1) guidelines] are included in an EIS, and (3) the EIS has been submitted to Congress prior to the actual discharge.

The permitting authority is the COE District Engineer (see Appendix A). Although a state agency may be given authority to run its own 404 permit program [CWA, Sect. 404, Subsects. (g)-(l)], no state currently has an approved program. The permitting authority (hereinafter referred to as COE or District Engineer) determines in writing the potential short-term or long-term effects of the proposed discharge on the physical, chemical, and biological components of the aquatic environment, based on information provided in the permit application form (see Appendix B). This factual determination is then used to make a finding of compliance or noncompliance with restrictions on a discharge and ultimately to decide whether to grant or deny the permit (40 CFR 230 Subpart B). The permitting authority bases its factual

determination on information provided in the application and on Sect. 404(b)(1) Guidelines promulgated by EPA (40 CFR 230). The decision to grant a permit is subject to EPA review. Section 404(c) authorizes the EPA Administrator to prohibit or withdraw the specification of a disposal site whenever he determines that discharge of such materials will have an unacceptable adverse effect on municipal water supplies, etc. Thus, the applicant for a Sect. 404 permit can expect to deal with the COE and the EPA. Other state and federal agencies that may be involved in the Sect. 404 permit process are discussed in Sect. 3 of this manual.

Rules and guidelines under which the Sect. 404 permit program is administered are published in the Code of Federal Regulations (CFR).[1] Those pertinent to DOE activities include:

- Regulations that prescribe the statutory authority, policies, and procedures applicable to the review of applications for Department of the Army permits for activities occurring in waters of the United States or oceans (33 CFR Parts 320 through 329);
- Specific policies, practices, and procedures followed by the COE in reviewing Sect. 404 permits (33 CFR 323);
- EPA guidelines for use in evaluating proposed discharges (40 CFR 230);
- Section 404(c) procedures used by EPA in prohibiting or withdrawing the specification of a dredged or fill material disposal site (40 CFR 231); and
- Proposed revision of EPA testing requirements for the specification of disposal sites (45 FR 85360). Until final approval, evaluation and testing procedures should be based on the 1975 Section 404(b)(1) interim final Guidelines published in 40 CFR 230.61.

The following definitions are important for understanding requirements for Sect. 404 permits:

- Dredged Material is "... material that is excavated or dredged from waters of the United States" [33 CFR 323.2(l)]. Discharges of pollutants into U.S. waters resulting from onshore processing of dredged material are not included in this term but are subject to Sect. 402 of the CWA. Also, discharges of material from plowing, cultivating, seeding, and harvesting, resulting from agricultural or silvicultural activities, are excluded by Section 404(f)(1)(A).
- Fill Material is "... material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a waterbody" [33 CFR 323.2(m)]. Activities considered to be discharge of fill materials include placement of fill that is necessary to the construction of any structure in U.S. waters; the building of any structure or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for industrial uses, causeways, dams and dikes; and fill for structures such as power plant intake and outfall pipes and subaqueous utility lines.
- Waters of the United States: This term is defined differently by COE and EPA, and the reader is referred to the relevant passages (33 CFR 323.2 and 40 CFR 230.2, respectively) to determine whether the affected waterbody falls under COE jurisdiction. Coverage under both definitions is broad, ranging from territorial seas and interstate navigable waters to isolated wetlands, intermittent streams, and prairie potholes.

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[1] References to the Code of Federal Regulations (CFR) in this document are to the edition revised as of July 1, 1981. Changes in the regulations since then are published in the Federal Register.

There are three classes of COE dredged and fill material discharge permits. An individual permit is "... a Department of the Army authorization that is issued following a case-by-case evaluation of a specific project involving the proposed discharge(s)" [33 CFR 323.2(d)]. A general permit is "... a Department of the Army authorization that is issued for a category or categories of discharges of dredged or fill material that are substantially similar in nature and that cause only minimal individual and cumulative adverse environmental impact" [33 CFR 323.2(p)]. Finally, a nationwide permit is "... a Department of the Army authorization that has been issued ... to permit certain discharges of dredged or fill material into waters of the United States throughout the Nation" [33 CFR 323.2(q)]. Dredged or fill material discharges that may qualify for a nationwide permit (and therefore do not need an individual permit) are described in 33 CFR 323.4. The type of permit (individual, general, nationwide) required for a proposed dredged or fill material discharge activity will be determined in the initial meetings with COE (Sect. 3 below). It is likely that many DOE projects will involve discharge of dredged or fill material in waters within COE's jurisdiction, and will be of sufficient potential impact to require individual permits in order to comply with Sect. 404 of the Clean Water Act.

The River and Harbor Act of 1899 (RHA) prohibits dredging, construction, or other work in, or affecting, navigable waters of the United States, except in compliance with Sects. 9 and 10. The COE has been empowered to issue permits specifying acceptable activities in navigable waters. Rules and procedures under which the Sects. 9 and 10 permit program is administered are published in 33 CFR Part 321, 33 CFR Part 322, and 33 CFR Part 325 (COE regulations were published before the 1977 amendments to the CWA). Criteria used by the COE in reviewing permit applications for activities regulated under Sects. 9 and 10 are specified in 33 CFR 320.4. These criteria are applicable to all COE permits and include environmental and other public interest concerns.

The COE has established an integrated permitting process for activities regulated under Sects. 9 and 10 of the RHA and Sect. 404 of the CWA. The same application form is used for authorization of each of these types of activities (Appendix B). The general review procedures are also the same, with the exception of the public hearing. The permitting process for activities regulated under Sects. 9 and 10 (or Sect. 404) does not require a public hearing, but may result in a public hearing if one is requested and agreed to by the COE District Engineer. In addition, permit applications for Sect. 9 and 10 regulated activities are reviewed under criteria established solely by COE which are somewhat less comprehensive than the guidelines developed by EPA for use by COE in reviewing Sect. 404 permit applications.

Major administrative reforms of the Sect. 404 and Sect. 10 permitting process have recently been initiated for the purpose of reducing delays and associated costs in processing permit applications (Press Release, Office of the Vice President, May 7, 1982). These reforms, which are scheduled to be implemented by the end of 1982, include limiting the number and time period of reviews by other agencies, providing increased incentives for assumption of the Sect. 404 program by individual states, expanding the use of general permits, clarifying the jurisdictional scope of the Sect. 404 permit program, and shortening or simplifying EPA's Section 404(b)(1) guidelines. With the exception of the EPA guidelines, the new reform measures are procedural in nature and should not directly affect the guidance on evaluating environmental impacts that is provided in this manual. However, substantial shortening or simplification of EPA 404(b)(1) guidelines would have direct bearing on the type of environmental information that should be collected. Future revisions to these guidelines should be considered when developing information and performing analyses required for obtaining dredging and filling permits from the U.S. Army Corps of Engineers.

3. DOE Compliance

Figure 1 summarizes the procedure by which a Sect. 404, Sect. 9, or Sect. 10 permit may be obtained. Briefly, the process begins by contacting the appropriate District Engineer of COE and the Regional Administrator of EPA (if Sect. 404 activity) about the proposed activity. If an individual permit is required [e.g., if the activity does not fall into the category of general or nationwide permits or is not exempted under 404(r)], a permit application is filed (Appendix B) which describes the activity. The District Engineer reviews information provided by DOE in the application

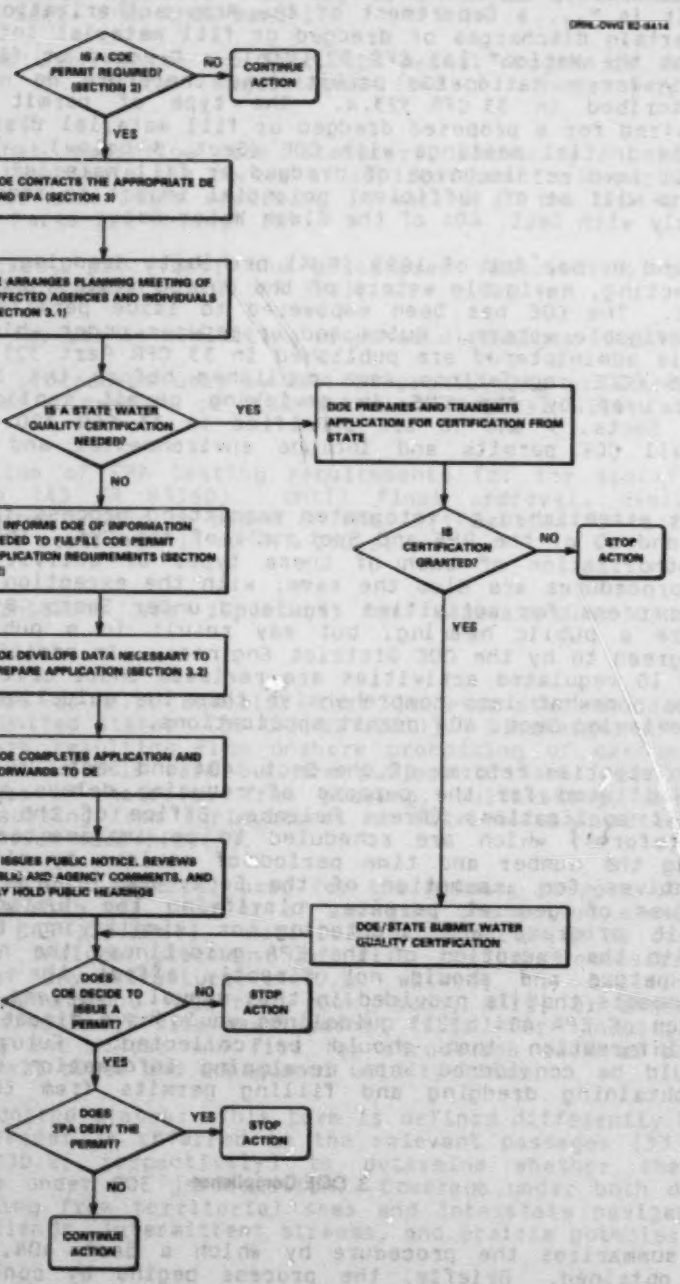
ORNL-DWG 82-8414
IS A COE PERMIT REQUIRED? (SECTION 2)
NO
CONTINUE ACTION
YES
DOE CONTACTS THE APPROPRIATE DE AND EPA (SECTION 3)
DE ARRANGES PLANNING MEETING OF AFFECTED AGENCIES AND INDIVIDUALS (SECTION 3.1)
IS A STATE WATER QUALITY CERTIFICATION NEEDED?
YES
DOE PREPARES AND TRANSMITS APPLICATION FOR CERTIFICATION FROM STATE
NO
DE INFORMS DOE OF INFORMATION NEEDED TO FULFILL COE PERMIT APPLICATION REQUIREMENTS (SECTION 3.2)
IS CERTIFICATION GRANTED?
NO
STOP ACTION
YES
DOE DEVELOPS DATA NECESSARY TO PREPARE APPLICATION (SECTION 3.2)
DOE COMPLETES APPLICATION AND FORWARDS TO DE
DE ISSUES PUBLIC NOTICE, REVIEWS PUBLIC AND AGENCY COMMENTS, AND MAY HOLD PUBLIC HEARINGS
DOE/STATE SUBMIT WATER QUALITY CERTIFICATION
DOES COE DECIDE TO ISSUE A PERMIT?
NO
STOP ACTION
YES
DOES EPA DENY THE PERMIT?
YES
STOP ACTION
NO
CONTINUE ACTION

Figure 1. Basic steps for obtaining a Corps of Engineers permit.

and prepares a written preliminary determination of impacts. Following comments by the public, state, and federal agencies, DOE may be asked to develop additional information. The District Engineer decides whether or not to issue a permit and determines the conditions or restrictions placed on the activity. In the case of Sect. 404 activities, issuance of the permit may be prohibited by either the EPA or the delegated state agency (e.g., if the necessary state water quality certification is not granted the COE will deny the Sect. 404 permit request).

As noted in Flow III-3 of the DOE Environmental Compliance Guide (DOE 1981), the process of obtaining a permit may be completed in as little as 60 to 90 days if the proposed activity is relatively minor or if there are no major objections. On the other hand, if major objections arise or an Environmental Impact Statement is required, permit processing time may exceed one year. Given the wide range of DOE projects, environmental settings, and requirements among the different COE districts and EPA regions, it is not possible to predict either the length of time or the amount and type of information needed to obtain a particular permit. However, information needs will be determined at an early stage in the permitting process (e.g., at the planning meeting). Also, while the specific information needed to make a determination may vary with the COE district in which the project is located, districts all generally follow the guidelines developed by EPA for specifying dredged material disposal sites (40 CFR 230). In some cases (e.g., the construction of transmission lines), the particular activity may be authorized by nationwide or general permits, and environmental protection may be afforded by standard management practices (33 CFR 323.4).

The remainder of this manual addresses the way in which environmental information needs may be determined (Sect. 3.1) and discusses approaches for the collection, evaluation, and presentation of this information (Sect. 3.2). The guidance contained in the following section emphasizes information requirements of individual permit applications for major projects. Permit renewals and permits for minor projects may require considerably less information (e.g., general and nationwide permits).

3.1 Planning Meeting

Informal planning meetings in which affected agencies and individuals discuss the significant issues associated with the proposed discharge can provide useful guidance to both DOE and COE. Such planning meetings have been used effectively in the past and are expected to become even more important in the future as ways are sought to streamline the permitting process. In the case of DOE activities that require an EIS, a formal process called scoping, in which early agency and public participation is planned and incorporated into the permitting action, is mandatory and shall be initiated by the lead agency as soon as practicable after a determination is made to prepare an EIS (40 CFR 1501.7). In some cases, formal consultation with COE for the purposes of obtaining Sect. 404 and Sect. 10 permits may best occur after the issuance of the Draft EIS, when more complete design information is usually available.

The planning meeting should occur as soon as possible after the initial contacts with COE. The District Engineer will arrange a meeting of affected individuals and agencies (e.g., EPA, Fish and Wildlife Service, state water quality agency, U.S. Coast Guard) for the purposes of outlining the proposed action and allowing the other parties to voice their concerns. As such, the DOE project manager should be prepared to discuss general aspects of the proposed action, such as the approximate volume of material to be discharged, sources of dredged or fill material, timing of the proposed action, and location of the proposed and alternative discharge sites. It is not necessary at this point to provide detailed information (e.g., sediment analyses or predicted turbidity plumes) unless they are already available, because one purpose of the meeting is to determine the approved tests and evaluations that should be conducted to provide the information necessary for a determination of impact.

Issues that should be discussed at the meeting include:

- The need for an EIS or EA to comply with the National Environmental Policy Act. If an EIS or EA is required for the proposed action, the lead and cooperating agencies should be named and a formal scoping process initiated.

- The concerns of the participating agencies and individuals. For example, under the Fish and Wildlife Coordination Act, COE has a special statutory obligation to consult with the U.S. Fish and Wildlife Service (FWS) and/or the National Marine Fisheries Service (NMFS) (DOE 1982a). The FWS and analogous state agencies can provide useful information on the fish and wildlife resources near the proposed work or discharge site, as well as the potential for the project's interference with threatened and endangered species or their habitats. Similarly, requirements for the necessary water quality certification by the affected state(s) should be determined at this meeting.

- The presence of any pre-existing stresses (e.g., point source or other dredged material discharges) at the proposed work or discharge site that could result in unacceptable cumulative adverse impacts.

- Information that is already available that could aid in the preparation of a permit application and its subsequent evaluation. This information could include biological surveys of the area, water quality information at the proposed site, physical/chemical analyses of the dredged material or sediments at the proposed work or discharge site, aerial photographs, creel censuses, prior environmental impact statements that considered the proposed site, state and federal records of pollutant spills or discharges, and permits that have been issued for related activities in the area. As a result of this meeting, the District Engineer may decide that existing information is adequate, making new testing or surveys unnecessary.

- Information that must be obtained by new testing and site surveys to address the concerns of COE and other agencies. Also, determine the guidelines used by the local COE district and EPA region (in the case of Sect. 404 activities) for evaluating permit applications as well as acceptable analytical techniques, survey methods, and bioassays.

- Coordination of information needs for the permit with those of other agencies. For example, assure that the biological survey will be prepared so as to satisfy the requirements of both the Sect. 404 permit and the Endangered Species Act (DOE 1982b).

- A timetable for collecting the environmental information, filing the application, and scheduling the subsequent steps in processing and reviewing the permit application.

This early planning or scoping meeting will be one of the most important steps in the process of obtaining a COE permit. The planning meeting provides a vehicle for input from other agencies, brings out pre-existing information which could eliminate or reduce the need for further testing, and provides DOE with an idea of the kinds of data that must be obtained and approved techniques for obtaining them. As such, the planning meeting will frequently reduce the cost and number of delays associated with subsequent steps in the permit process.

3.2 Environmental Information

The environmental information needed to complete and process a particular permit is determined to a large extent at the planning meeting but, in the case of Sect. 404 permits, may also be influenced by comments during the subsequent public comment period or public hearings. Information needs for different energy projects will vary widely, and data requirements for specific permit applications cannot be generalized. However, environmental information needed for Sects. 9 and 10 activities (work in navigable waters) is likely to be much less extensive than that necessary for Sect. 404 activities (disposal of dredged material). This difference is primarily because waters used for navigation are likely to receive some maintenance dredging and perhaps other work and are thus already somewhat disturbed. In contrast with Sect. 404 activities for which EPA has also established acceptable review criteria and policies, permit applications for Sects. 9 and 10 activities are reviewed solely in accord with the COE-established review criteria (33 CFR 320.4), which are somewhat less comprehensive and specific.

The remainder of this document will focus on the environmental information required for obtaining permits for Sect. 404 activities, because its collection and subsequent review are more demanding and because it includes all information needed for other activities. In addition to the COE review criteria (33 CFR 320.4), applications are reviewed in accordance with guidelines promulgated by the EPA (40 CFR 230). EPA Guidelines for the specification of disposal sites for dredged or fill material indicate the types of environmental issues that COE will consider when reviewing a Sect. 404 permit application, as well as some of the techniques that can be used to address these issues. The permitting authority is required to address all of the relevant provisions of the EPA Guidelines in deciding on the issuance of a permit. In each of the following sections, specific issues outlined in the EPA Guidelines (40 CFR 230, Subparts C through G) are listed. These listings are followed by suggested general approaches for collecting, evaluating, and presenting environmental information needed to address the issues.

3.2.1 Potential Impacts on Abiotic Characteristics of the Ecosystem

Discharge of dredged or fill material into a waterbody will have a number of physical and chemical effects that may alter the suitability of the water for aquatic biota and/or human use. If the discharge occurs in an area of low wave or current energy, the material is likely to settle out, thereby changing the bottom contours and smothering or displacing bottom-dwelling organisms. On the other hand, if discharge occurs at high energy sites, settling is likely to be slow and potential problems with extensive and long-lasting turbidity plumes may arise. Impacts on physical/chemical characteristics of the discharge site can be considered under the following general categories:

3.2.1.1 Substrate effects

- Deposition of dredged or fill material can alter the substrate elevation or bottom contour, which could result in changes in water circulation, depth, current patterns, and temperature.
- Deposited material may smother benthos and, if different in composition from the original substrate, may not allow recolonization by the same types of organisms.
- Erosion, slumping, or lateral displacement of deposited dredged material may affect adjacent aquatic areas for some time after disposal activities cease.

Information on the existing bottom contours and typical current velocities at the disposal site should be gathered. These data may already be available for navigable waters from the COE or U.S. Coast Guard or from previous permit applications or EISs involving the proposed site. Frequently, however, this information will need to be developed by new site surveys. When coupled with data on the particle size distribution of material to be discharged (Folk 1966, COE 1976) and settling velocities for different-sized particles (Palermo et al. 1978), estimates can be made of the amount of material that will be deposited at the disposal site, shape and areal extent of the deposits, and the extent of any turbidity plume. Knowledge of extreme current velocities at the discharge site will provide insight into the integrity of the deposited material.

3.2.1.2 Suspended particulates/turbidity

- Reduced light penetration caused by turbidity could lower photosynthetic rates or the effectiveness of sight-feeding organisms.
- Chemical and biological oxygen demand may reduce the dissolved oxygen content in the water column.
- Toxic metals and organic compounds, pathogens, and viruses which are adsorbed to suspended particulates may become available for uptake by aquatic biota.

- Turbidity plumes created by movement of suspended particulates are aesthetically displeasing and may affect human use of the water.

Information on the particle size distribution of the material to be discharged, settling velocities of suspended particles, current velocities at the disposal site, and naturally occurring turbidity levels should be obtained. Because it is difficult to relate absolute values of turbidity to potential decreases in primary production or visually mediated activities of aquatic organisms at a particular site, the estimated size, location, and nature of the plume should be discussed relative to naturally occurring turbidity levels. Chemical oxygen demand and biological oxygen demand of sediment suspensions can be measured analytically (COE 1976) and used to predict discharge effects on dissolved oxygen concentrations in the receiving water. Approved test procedures for the analysis of metals in water are listed in 40 CFR 136.3. Techniques for microbiological examination and organic matter determination of water are described in APHA-AWWA-WPCF (1975).

3.2.1.3 Water quality

- Dissolution or leaching of constituents from the discharged material may alter the color, odor, taste, and clarity of the receiving water, thereby affecting its aesthetics and suitability for human consumption and use.
- Dissolved nutrients and organic matter in the discharged material may lead to problems with eutrophication and low dissolved oxygen, respectively.
- As wetlands are destroyed, the filtration/purification process afforded by them is also lost.

Standard methods for the analysis of water quality constituents are available (APHA-AWWA-WPCF 1975). The COE (1976) provides a method for calculating the mixing zone that will be required to dilute contaminant concentrations associated with a discharge of dredged material to an acceptable level. The estimated mixing zone can then be compared to applicable water quality standards to judge the acceptability of the proposed activity.

3.2.1.4 Current patterns, water circulation, and water-level fluctuations

- Discharged material may obstruct flow, change the direction and velocity of flow, and alter the normal water-level fluctuation patterns.
- These effects can alter shoreline and substrate erosion and deposition rates, deposition of suspended particulates, mixing characteristics, water stratification, and the location, structure, and dynamics of aquatic communities.

Bottom contour maps, estimates of the volume of dredged material, and settling characteristics of the material to be discharged should be used to predict the shape, areal extent, and elevation of the deposits. Based on this information, the potential for interference with existing current patterns, circulation patterns, or water-level fluctuations in the immediate deposition area can be assessed.

3.2.1.5 Salinity gradients

- Obstructions which divert or restrict flow of either freshwater or saltwater may change the location or extent of existing salinity gradients. Such modifications could affect municipal water supplies and the activities of biota (e.g., feeding, spawning) which are attuned to the freshwater/ saltwater interface.

Information on the shape and size of the dredged material deposit can be used to determine whether the deposited material is likely to obstruct freshwater or saltwater movements. If so, the location of municipal water intakes, fish spawning sites and nursery areas, etc., in the potentially affected area should be identified.

3.2.2 Potential Impacts on Ecosystem Biota

Aquatic organisms may be affected both directly and indirectly by dredged material discharges. Direct impacts include smothering or dislocation of benthic organisms by material deposits, adverse effects of turbidity on the ability of animals to feed or respire, and toxic effects of contaminants introduced into the water column from dredged materials. Indirect impacts occur when the suitability of an area for aquatic biota is changed as a consequence of secondary effects of dredged or fill material placement (e.g., altered current patterns, water-level fluctuations, or salinity gradients). Knowledge of potential physical and chemical impacts of the proposed activity (Sect. 3.2.1) is essential to predicting related biological impacts. This section considers the types of biological issues that should be considered in a Sect. 404 permit. A detailed treatment of the environmental effects of dredging is provided in Loar et al. (1980).

3.2.2.1 Impacts to aquatic and terrestrial biota

- Dredged material deposition can smother benthic organisms (e.g., shellfish beds) and adversely affect reproduction by burying eggs of fish and other organisms.
- Suspended material can interfere with respiration of aquatic organisms by clogging the gills,or can abrade the gills, making the organism more vulnerable to disease.
- Turbidity will reduce sunlight penetration, thereby limiting primary production of phytoplankton and aquatic macrophytes.
- Turbidity can interfere with the ability of sight-feeding fish and wildlife to obtain food.
- Suspended materials may interfere with the ability of filter-feeding aquatic organisms (e.g., clams, mussels, oysters) to obtain food.
- Toxic contaminants in the discharged material can kill organisms directly or effect a shift in community structure and composition by favoring the growth of pollution-tolerant species.
- Bioaccumulation of contaminants can result in chronic toxic effects, e.g., reduced reproductive success.
- Food organisms (fish, shellfish) may be tainted by contaminants in the discharged material and rendered unfit for human consumption.
- Filling of wetland areas may cause a loss of important breeding or nesting areas, cover, or travel corridors for terrestrial wildlife.

A reliable evaluation of potential biological impacts resulting from a proposed dredging activity may be a complex task. First, an assessment of the scope and nature of physical/chemical impacts must be made (Sect. 3.2.1). Information on the biotic resource that will be affected may be obtained from sport and commercial harvest records, creel censuses, stocking records, bird counts, previous site surveys, environmental impact statements and assessments for other nearby projects, or other types of permits [e.g., reports filed in compliance with Sects. 316(a) and (b) of the CWA (see Appendices I and J of DOE 1982c] issued or under review for projects in the area. Consultation with state and federal fish and wildlife agencies can be a particularly useful means of obtaining existing information on the biota at the proposed discharge site. In some cases, a new biological survey of the site will be required.

Predictions of the extent and location of dredged material deposits can be used to assess the direct loss of shellfish or the reproductive potential of finfish that deposit their eggs on or in the substrate. The effects of any deposition of discharged materials into important spawning or nursery areas should be addressed. Effects of turbidity and suspended solids can be evaluated by comparing the predicted levels in the mixing zone (Sect. 3.2.1) to published studies of the effects of suspended solids and sediments on aquatic biota (reviews by Cairns 1968, Darnell 1976, Hollis et al. 1964, Muncy et al. 1979, Sorenson et al. 1977, Stern and Stickle 1978).

Acute toxicities of contaminants in the discharged materials can be assessed by comparing estimated concentrations in the receiving waters to published critical values in the literature for various species (e.g., EPA 1976, 45 FR 79318). The tolerances of certain standard bioassay organisms (e.g., bluegill, Daphnia, chironomid larvae) to a wide range of pollutants are known, and these species can be used to predict contaminant effects on a given trophic level. Chronic toxicities and bioaccumulation potentials of contaminants are frequently less well understood. It is important to consider these factors, however, if contamination by heavy metals or persistent organics (e.g., PCBs) are a concern (see Appendix A of Loar et al. 1980). Chronic toxicity data for 64 toxic pollutants are published in the criteria documents announced in 45 FR 79318.

Tests designed to determine the chemical and biological degradation caused by contaminants and other potentially toxic or hazardous pollutants that are believed to be in dredged or fill material are described in 40 CFR 230.60 through 230.61. Revisions of these testing requirements have been proposed (45 CFR 85360).

3.2.2.2 Threatened and endangered species

Discharge of dredged or fill materials may cover, displace, or kill threatened and endangered species. The habitat (good quality water, spawning and nursery areas, protective cover, food supply, nesting areas) that supports threatened or endangered species may also be adversely affected by the proposed activity. The U.S. Fish and Wildlife Service and state agencies responsible for fish and game maintain lists of threatened and endangered species. These agencies should be consulted at the earliest possible stage in project development to ensure compliance with the Endangered Species Act (DOE 1982b).

3.2.3 Potential Impacts on Special Aquatic Sites

Guidelines prepared by EPA for COE review of Sect. 404 permit applications (40 CFR 230.40 through 230.45) list and describe several types of aquatic habitats that should receive special consideration. These include fish and wildlife sanctuaries and refuges, wetlands, coastal mud flats, vegetated shallows, coral reefs, and riffle and pool complexes. Some special sites may be particularly productive or valuable habitat for fish and wildlife, such as critical spawning, nursery, or feeding areas. Others may be especially sensitive to disruption. For example, eliminating pools and meanders from a stream by dredged material discharges may reduce water-holding capacity, increase erosion, and cause rapid runoff from a watershed, thereby increasing downstream floodwater damage. Similarly, disruptions in flow or circulation patterns resulting from discharge of dredged material may cause a seemingly minor loss of wetland acreage. However, filling wetlands could have major secondary impacts by modifying their capacity to retain and store floodwaters and to serve as a buffer zone shielding upland areas from wave actions, storm damage, and erosion.

Realization of the importance of wetlands and other special aquatic sites, coupled with concern for their rapid loss in recent years to development activities, has resulted in a national policy which has shifted decisively against construction in or filling of wetlands (Executive Order 11990, Protection of Wetlands, 45 FR 101). The DOE project manager should give careful attention to the presence of special aquatic sites near the proposed project, because COE, EPA, U.S. Fish and Wildlife Service, or intervenors are likely to oppose strongly the issuance of a permit for dredged or fill material discharges that could adversely affect such valuable areas.

3.2.4 Potential Impacts on Human Use

Possible effects of dredged material discharges on the quality of water used for human consumption should be considered. Techniques for analyzing color, taste, odor, turbidity, and concentrations of various chemical consitutents of water are described in APHA-AWWA-WPCF (1975). The tests could be performed on an elutriate of the discharged material (COE 1976) and utilized, along with information on the estimated size of the mixing zone, applicable water quality criteria or standards, and the location of all municipal and private water supply intakes, to address the potential for degradation of human water supplies.

The value of recreational and commercial fisheries may be diminished by the discharge of dredged or fill material. The DOE project manager should determine the extent of fishing activity near the proposed discharge site and whether it will be affected (e.g., by smothered spawning sites or shellfish beds, by contamination from heavy metals, persistent organics, bacteria, or viruses). Refer to Sect. 3.2.2 for a discussion on the assessmant of biological impacts.

Evaluation of a proposed dredged material discharge should also consider possible detrimental effects to water-related recreation, aesthetics, wilderness areas, parks, research sites, and other types of preserves (40 CFR 230.54).

3.3 Alternatives

Guidelines for COE review of Sect. 404 permit applications (40 CFR 230.10) state that "Except as provided under Section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." Practicable alternatives are defined as those that are available and can be implemented after taking into consideration cost, existing technology, logistics, and overall project objectives [40 CFR Sect. 230.10(2)].

Major alternatives to the proposed activity that should be considered include (1) no action (i.e., no discharge of dredged or fill materials), (2) discharge of materials onto non-wetlands, (3) discharge of materials into other waters, (4) modification of the project design and/or operation to minimize adverse impacts at the proposed site, and (5) mitigation of adverse impacts, for example, by creating new aquatic or wetland habitats. Both the range of alternatives considered and the level of detail provided for each will depend to a great degree on the seriousness of the potential adverse impacts at the proposed site. In some cases, modification of some aspects of the activity (e.g., altering the seasonal timing or rate of discharge and use of chemical flocculents to enhance the deposition of suspended particulates) may suffice, whereas in others (e.g., a proposed discharge which impacts an endangered species or special aquatic area), major relocation of the activity may be necessary.

Subpart H of 40 CFR 230 lists a number of actions which could be used to minimize adverse effects of a proposed discharge on the aquatic ecosystem. These fall into the broad categories of actions which (1) concern the location of the discharge, (2) concern the material to be discharged, (3) control the material after discharge, (4) affect the method of dispersion, (5) relate to the appropriate discharge technology, (6) minimize adverse effects on plant and animal populations, and (7) minimize adverse effects on human use. Serious consideration of these alternative actions may make relocation to another discharge site unnecessary.

As noted in Sect. 3.2.3, authorization for a proposed discharge activity at special aquatic sites (e.g., wetlands) may be very difficult to obtain. The EPA Guidelines state that "where the activity associated with a discharge which is proposed for a special aquatic site ... does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose ..., practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise. In addition, where a discharge is proposed for a special site, all practicable alternatives to the proposed discharge which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic system, unless clearly demonstrated otherwise" [40 CFR 230.10(a)(3)]. Clear demonstration of either a lack of alternatives to the discharge

in a special aquatic site or the superiority of the proposed special aquatic site to other practicable alternatives is likely to be costly and time-consuming.

Finally, DOE projects that require the preparation of EISs or EAs under NEPA will require a formal, detailed evaluation of alternatives. In many cases, this exercise will also provide the information needed for evaluating Sect. 404 alternatives. However, the discussion of NEPA alternatives may include a broader range of options than required by the EPA Guidelines or may not provide sufficient detail for particular alternatives. In the latter case, supplemental information may be required [40 CFR 230.10(a)(4)]. Similarly, alternatives evaluated under a Coastal Zone Management program, a Sect. 208 program, or other planning processes shall be considered by the Sect. 404 permitting authority as part of the alternatives under the EPA Guidelines. As with NEPA alternatives, however, supplemental information may be necessary [40 CFR 230.10(a)(5)].

3.4 Advanced Identification of Disposal Areas

The EPA Guidelines (40 CFR 230.80) allow for the advanced identification of sites that are either (1) possible future disposal sites, including existing disposal sites and nonsensitive areas, or (2) unsuitable for disposal site specification. In neither case is this advanced identification considered final (i.e., identification of a possible future site does not constitute specification of that site or a permit for the discharge of dredged or fill materials at that site). Similarly, identification of sites as unsuitable does not prohibit applications for permits to discharge into these areas. The advanced identification exercise is intended to facilitate processing of individual or general permit applications, and the DOE project manager should explore with COE and EPA the possibility of discharging dredged or fill material at such sites.

4. Summary

The procedures and information needs for obtaining COE permits for dredging or other work in navigable waters (authorized under Sects. 9 and 10 of the RHA) or the discharge of dredged or fill material (authorized under Sect. 404 of the CWA) are likely to vary widely, depending on the type of activity proposed, the environmental setting, and the requirements of the particular COE district and EPA region. Concerns of COE, EPA, and other involved federal and state agencies, the amount of existing information available, and approved methods for collecting new information should be determined very early in the permitting process (i.e., at the initial planning meeting).

The application form, general review procedures established by COE, and the issued permit for activities regulated under Sects. 9 and 10 and Sect. 404 are the same. However, in the case of discharge of dredged material, the EPA has established additional criteria to be used in the review of permit applications. Although COE District Engineers may have different information requirements for making a determination of fact and finding of compliance for a proposed discharge activity, they do generally follow the Guidelines developed by EPA for specifying dredged material disposal sites. These EPA guidelines (40 CFR 230.10) prohibit discharges of dredged or fill materials: (1) that would have less adverse impact on the aquatic ecosystem, if there are practicable alternatives available, (2) that cause or contribute to violations of any applicable state water quality standard, (3) that violate any applicable toxic effluent standard or prohibition under Sect. 307 of the Clean Water Act, (4) that jeopardize the continued existence of species listed as endangered or threatened under the Endangered Species Act of 1973 or result in the likely destruction or adverse modification of a critical habitat, (5) that violate any requirement imposed to protect any marine sanctuary designated under the Marine Protection, Research, and Sanctuaries Act of 1972, and (6) that cause or contribute to significant degradation of waters of the United States, except as provided under Section 404(b)(2).

Once information needs for COE review of a permit application are determined, the DOE project manager can utilize the general approaches suggested in this manual to collect, analyze, and present the data. Broadly, the procedure consists of predicting impacts of the proposed activity (Sect. 3.2) and providing a clear presentation of alternatives (Sect. 3.3). This information will aid the District Engineer in making the subsequent written factual determination and findings of compliance necessary for a full review of the permit application.

5. References

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Appendix A

List of U.S. Army Corps of Engineers District Offices

Address correspondence to:
The District Engineer, U.S. Army Engineer District

District	Address	Attention	Commercial and FTS Phone Nos.
Alaska	P.O. Box 7002, Anchorage, AK 99510	NPACO--RF	907 752-4942 FTS: None
Albuquerque	P.O. Box 1580, Albuquerque, NM 87103	SWACO--OR	505 766-2776 FTS: 474-2732
Baltimore	P.O. Box 1715, Baltimore, MD 21203	NABOP--F	301 962-3670 FTS: 922-2020
Buffalo	1776 Niagara St., Buffalo, NY 14207	NCBCO--S	716 876-5454 FTS: 473-2200
Charleston	P.O. Box 919, Charleston, SC 29402	SACOO--P	803 577-4171 FTS: 677-4344
Chicago	219 Dearborn St., Chicago, IL 60604	NCCCO--SP	312 353-6434 FTS: 353-8213
Detroit	P.O. Box 1027, Detroit, MI 48231	NCECO--L	313 226-6813 FTS: 226-6413
Ft. Worth	P.O. Box 17300, Ft. Worth, TX 76102	SWFOO--P	817 334-2814 FTS: 334-2150
Galveston	P.O. Box 1229, Galveston, TX 77553	SWGCO--OC	713 766-1211 FTS: 527-6006
Huntington	P.O. Box 2127, Huntington, WV 25721	ORHOP--WP	304 529-2318 FTS: 924-5258
Honolulu	Bldg. 230, Ft. Shafter, Honolulu, HI	PODCO--O	808 438-9258 FTS: None
Jacksonville	P.O. Box 4970, Jacksonville, FL 32201	SAJOO--RP	904 791-2211 FTS: 946-1151
Kansas City	700 Fed. Bldg., 601 E. 12th St., Kansas City, MO 64106	MRKOO--P	816 374-3645 FTS: 758-3896
Little Rock	P.O. Box 867, Little Rock, AR 72203	SWLCO--O	501 378-5296 FTS: 740-5531
Los Angeles	P.O. Box 2711, Los Angeles, CA 90053	SPLCO--N	213 688-5607 FTS: 798-5522
Louisville	P.O. Box 59, Louisville, KY 40201	ORLOP--SP	502 582-6461 FTS: 352-5011
Memphis	668 Fed. Ofc. Bldg., Memphis, TN 38103	LMMOD--NN	901 521-3471 FTS: 222-3618
Mobile	P.O. Box 2288, Mobile, AL 36628	SAMOP--S	205 690-2660 FTS: 537-2528
Nashville	P.O. Box 1070, Nashville, TN 37202	ORNOP--F	615 251-5181 FTS: 852-5626
New Orleans	P.O. Box 60267, New Orleans, LA 70160	LMNOD--S	504 865-1121 FTS: 687-1121
New York	26 Fed. Plaza, New York, NY 10007	NANOP--E	212 264-3996 FTS: 264-3311
Norfolk	803 Front St., Norfolk, VA 23510	NAOOP--P	804 446-3652 FTS: 827-3500
Omaha	6014 USPO & Courthouse, 215 N 17th St., Omaha, NE 68102	MROOP--N	402 221-4133 FTS: 864-3020
Philadelphia	U.S. Custom House, 2nd & Chestnut St., Phil., PA 19106	NAPOP--R	215 597-2812 FTS: 597-4701
Pittsburgh	1884 Fed. Bldg., 1000 Liberty Ave., Pittsburgh, PA 15222	ORPOP--S	412 644-6872 FTS: 722-6802
Portland	P.O. Box 2946, Portland, OR 97208	NPPND--RF	503 221-6997 FTS: 423-6021

Appendix A. (Cont'd)

Address correspondence to:
The District Engineer, U.S. Army Engineer District

District	Address	Attention	Commercial and FTS Phone Nos.
Rock Island	Clock Tower Bldg., Rock Island, IL 61201	NCROD--S	309 788-6361 FTS: None
Sacramento	650 Capitol Mall, Sacramento, CA 95814	SPKCO--O	916 440-2327 FTS: 448-2292
St. Louis	210 No. 12th St., St Louis, MO 63101	LMSOD--NP	314 268-2872 FTS: None
St. Paul	1135 USPO & Custom House, St. Paul, MN 55101	NCSCO--S	612 725-5819 FTS: 725-7506
San Francisco	211 Main St., San Francisco, CA 94105	SPNCO--R	415 556-2752 FTS: 556-0985
Savannah	P.O. Box 889, Savannah, GA 31402	SASOP--F	912 233-8822 FTS: 248-5822
Seattle	P.O. Box 3-3755, Seattle, WA 98134	NPSOP--RF	206 764-3495 FTS: 399-3690
Tulsa	P.O. Box 61, Tulsa, OK 74102	SWTOD--N	918 581-7351 FTS: 736-7311
Vicksburg	P.O. Box 60, Vicksburg, MS 39180	LMKOD--F	601 636-1311 FTS: 542-3821
Walla Walla	Bldg. 602, City-County Airport, Walla Walla, WA 99362	NPWOP--NF	509 525-5500 FTS: 442-5500
Wilmington	P.O. Box 1890, Wilmington, NC 28401	SAWCO--E	919 763-9971 FTS: 671-4647
The Division Engineer, U.S. Army Engineer Division:			
New England	424 Trapelo Road, Waltham, MA 02154	NEDOD--R	617 894-2400 FTS: 839-7401

Appendix B

Application for a Department of the Army Permit

APPLICATION FOR A DEPARTMENT OF THE ARMY PERMIT
For use of this form, see EP 1145-2-1

Form Approved - Office of Mgmt & Budget No. 49-R0420

The Department of the Army permit program is authorized by Section 10 of the River and Harbor Act of 1899, Section 404 of P. L. 92-500 and Section 103 of P. L. 92-532. These laws require permits authorizing structures and work in or affecting navigable waters of the United States, the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Information provided in ENG Form 4345 will be used in evaluating the application for a permit. Information in the application is made a matter of public record through issuance of a public notice. Disclosure of the information requested is voluntary; however, the data requested are necessary in order to communicate with the applicant and to evaluate the permit application. If necessary information is not provided, the permit application cannot be processed nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and checklist) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

1. Application number (To be assigned by Corps)	2. Date Day Mo. Yr.	3. For Corps use only.
4. Name and address of applicant. Telephone no. during business hours A/C ( ) _____ A/C ( ) _____	5. Name, address and title of authorized agent. Telephone no. during business hours A/C ( ) _____ A/C ( ) _____	

6. Describe in detail the proposed activity, its purpose and intended use (private, public, commercial or other) including description of the type of structures, if any to be erected on fills, or pile or float-supported platforms, the type, composition and quantity of materials to be discharged or dumped and means of conveyance, and the source of discharge or fill material. If additional space is needed, use Block 14.

7. Names, addresses and telephone numbers of adjoining property owners, lessees, etc., whose property also adjoins the waterway.

8. Location where proposed activity exists or will occur.

Address:

_____
Street, road or other descriptive location

_____
In or near city or town

_____
County State Zip Code

Tax Assessors Description: (If known)

Map No. Subdiv. No. Lot No.

Sec. Twp. Rge.

9. Name of waterway at location of the activity.

ENG Form 4345, 1 OCT 77 Edition of 1 Apr 74 is obsolete.

10. Date activity is proposed to commence. _____

Date activity is expected to be completed _____

11. Is any portion of the activity for which authorization is sought now complete? ☐ YES ☐ NO
If answer is "Yes" give reasons in the remark section. Month and year the activity was completed _____. Indicate the existing work on the drawings.

12. List all approvals or certifications required by other federal, interstate, state or local agencies for any structures, construction, discharges, deposits or other activities described in this application.

Issuing Agency	Type Approval	Identification No.	Date of Application	Date of Approval

13. Has any agency denied approval for the activity described herein or for any activity directly related to the activity described herein?

☐ Yes ☐ No (If "Yes" explain in remarks)

14. Remarks or additional information.

15. Application is hereby made for a permit or permits to authorize the activities described herein. I certify that I am familiar with the information contained in this application, and that to the best of my knowledge and belief such information is true, complete, and accurate. I further certify that I possess the authority to undertake the proposed activities.

_____
Signature of Applicant or Authorized Agent

The application must be signed by the applicant; however, it may be signed by a duly authorized agent (named in Item 5) if this form is accompanied by a statement by the applicant designating the agent and agreeing to furnish upon request, supplemental information in support of the application.

18 U. S. C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of The United States knowingly and willfully falsifies, conceals, or covers up by any trick, scheme, or device a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false fictitious or fraudulent statement or entry, shall be fined not more than $10,000 or imprisioned not more than five years, or both. Do not send a permit processing fee with this application. The appropriate fee will be assessed when a permit is issued.

UNITED STATES
DEPARTMENT OF ENERGY
WASHINGTON, D.C. 20585

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